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ABSTRACT

An observational schedule to assess child behavior in natural settings was devised, using a system of precoding of types of behavior. The schedule was designed to discover the opportunities the adult has provided for the child and the personal setting the child has selected from those available. Two types of codes are used. The first-level coding records three aspects of the child's behavior every 15 seconds: the mode, direction of attention and continuity, as well as adult input, if occurring. In the second-level coding, these 15-second codings are grouped into larger units called activity segments to describe the larger activity system which provides an organizing framework for the child's behavior. A schedule also was developed for describing the characteristics of the physical space in day care centers and in homes. Reliability for each segment of both schedules is discussed. The form used for coding observations is provided. (For related document, see PS006 425.) (KM)

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Part 1 of Final Report

ASSESSMENT OF CHILD-REARING ENVIRONMENTS: AN ECOLOGICAL APPROACH

Prepared for the Children's Bureau
Office of Child Development,
U.S. Department of Health, Education,
and Welfare #R-219 (C6)

THE

DAY CARE

ENVIRONMENTAL INVENTORY

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PREFACE

This monograph describes the observation schedules designed for a study, The Assessment of Child-Rearing Environments: An Ecological Approach, PR-219 (C5), funded by the Children's Bureau, Office of Child Development. This study grappled with the problem of identifying dimensions in environments for young children which are helpful in assessing an environment's pertinence, richness, and adequacy, and which also predict its usefulness for immediate adaptation and for future growth of children with diverse developmental and social histories.

The observation schedules have been used in a variety of day care centers and homes with children age two to five years. We have experimented briefly in using them with children as young as one year and with those of primary school age. The 15-second coding also has been adapted to observe adults in group process and to evaluate their growth (Milich, 1972).

The findings from the study are available in other monographs, by the same authors, which (1) compare children's experience in four types of care (open and closed structure group care, family day care, and nursery school-home care), (2) consider the effect of varying adult child ratios on children's experience, (3) examine characteristics of children as they relate to the experiences provided in day care, and (4) provide an environmental inventory for assessing day care environments.

INTRODUCTION

A Comparison of Observational Schedules

In recent years a number of observational schedules have appeared which are designed to assess behavior in natural settings. These vary in the comprehensiveness of the information to be collected, in the amount of effort necessary to extract desired information and in the development of a code for utilizing information. Those which are designed to record only a limited number of behaviors present fewer technical problems and usually are designed for precoding - a step which also simplifies retrieval.

Few schedules which are concerned with a multi-dimensional record have attempted to precode. Characteristically a running record is obtained by dictating into a portable tape recorder. Coding is done later either from a typed manuscript or directly from the tape.

The most comprehensive and time-consuming approach has been the specimen record developed at the Midwest Field Station by Roger Barker and his colleagues (Barker, 1954; Wright, 1967). Using this approach the observer attempts to record everything that the subject does. The ensuing record is then edited, typed, and edited again. M. Schoggen has stated that the production of such a record (not including typing) and later coding consume about ten hours of observer time for each hour (or less) of observation (Schoggen, personal communication, 1972). The quality of such a record is impressive. Furthermore, this type of document can be preserved as an archival record available to other investigators. However, because of the time consumed the number of subjects inevitably remains small.

Other investigators have attempted to obtain a comprehensive record which might be less time-consuming. APPROACH, developed for Bettye Caldwell's project, utilizes a running record in which the narrative is unitized according to its grammar; i.e., each time a verb is used a unit of action has occurred (Honig, 1970). This action along with the subject, object and qualifying adverbs is later coded. Originally, it was hoped that this coding could be done directly without the necessity of recording a running record; however, this step did not prove feasible primarily because of the difficulty in instantaneous application of the code (Caldwell, personal communication, 1972). APPROACH was not designed to produce permanent records for archival purposes.

Although unknown to the author at the time of this study, Gill M. Leach has just published a shorthand code which permits a running

commentary on behavior in natural settings. Like Caldwell's schedule it utilizes a grammatical base. However, the grammar has been tied to a computer program, PRIMATE, and probably offers potential for considerable flexibility and permits retrieval of sequences of behavior which have been almost impossible to handle by means of conventional computer programs (Leach, 1972).

All three of these approaches have concentrated on recording virtually all behaviors emitted by or impinging on the subject and have made few assumptions about the nature of the subject. The methods described cover a wide range of information and can be utilized across age groups and settings. However, the usefulness of collecting so much data depends on the eventual retrieval of pertinent information. Barker and his colleagues have developed a variety of ways of analyzing their data. A unique feature of their analyses has been the attempt to elucidate the structure of the environment, most especially the identification of the behavior setting. Identification of this unit has suggested a series of attributes which can then be identified and used for comparative purposes (Barker, 1968). Also useful has been the use of Schoggen's Environmental Force Units for describing the pressures placed upon inhabitants to comply with environmental demands. Other forms of analysis have examined the sources of initiation of activity (Schoggen, 1963) and sources of frustration (Faul, 1963).

Other investigators, also committed to multi-dimensional approaches, have begun with more specific assumptions about the nature of the subject or the value of certain kinds of experiences. The HOME SCALE, an outgrowth of the Harvard Pre-School Project directed by Burton White, was designed for use with one- to three-year olds (Watts, et al, 1972). This scale is designed to evaluate the relevance and value of the child's experience most especially for intellectual and also for social development and to characterize the role played by the human and non-human environment. In its final form, this scale provides for time sampling in 10 minute blocks alternating 15 seconds of observation with 15 seconds of coding.

Some years ago, H. H. Anderson developed a comprehensive coding system for recording behavior of both teachers and children in group settings based on conceptions of dominative and integrative behavior (Anderson, 1939).

Robert L. Spaulding (1970) has designed a precoded observation schedule for use in primary school classrooms which categorizes behavior according to coping skills 1/. This schedule incorporates many of the

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1/ Lois Murphy, who has also studied coping skills, did not develop formal schedules. However, her observations on the developing coping skills of children are detailed and show a clear relationship between specific behaviors and conceptual framework (Murphy, 1962).

behaviors listed in APPROACH and the HOME SCALE, but provides a framework for organizing the somewhat unwieldy list of categories. However, the schedule is designed according to considerations for classroom management and classifies certain behaviors as negative or disruptive without concern for the child's activity system.

The Relationship of Our Schedule to Those Discussed

In designing our observation schedule we sought a method which would permit precoding, primarily because of our need for a sample size larger than could be handled by the two-step method of recording and coding. The decision to precode forced us to anticipate the kinds of information which we hoped to retrieve, so that we could develop a manageable coding and retrieval system. The observational schedules which have been described possess many of the features that we hoped to include. We wished to retain the environmental structure which the approach of Barker and his colleagues permits, and the ability to code for a wide range of naturally occurring behaviors which APPROACH and the HOME SCALE have developed. The work of Anderson, Spaulding and Murphy suggested a conceptual approach which appeared useful for categorizing behaviors.

Our solution borrowed heavily from all these approaches. The observational instrument which we developed attempts to provide a view of the child's activity on two levels: (1) the ongoing 15-second coding of the child's mode of activity and (2) the grouping of the 15-second codings into activity segments which provide the context and some sense of organizing purpose. Our goal was to provide a detailed, coherent description of the child's experienced environment - the personal activity system which the child constructs within the given matrix of the larger setting. The schedule was designed to answer two questions:

(1) What opportunities has the adult provided for the child? and
(2) What personal setting has the child selected from those available?

In addition to the observation schedule which describes the child's activity, an extensive schedule also was developed for describing the characteristics of the physical space in centers and in homes.

I

THE DAY CARE ENVIRONMENTAL INVENTORY

Two types of codes have been developed. The first-level coding records the child's mode of action every 15 seconds, thus providing information on the child's moment-to-moment activity. Such a record is incomplete without an account of the larger activity system which provides an organizing framework for the child's behavior. For this reason a system was developed to group these 15-second codings into larger units called activity segments. The second-level coding provides descriptors of these larger units.

The first-level coding requires the observer to code three aspects of the child's behavior: the mode, direction of attention and continuity. In addition, adult input, if occurring, also is coded.

Child's Mode of Behavior: First-Level Coding

The first letter, R, T, E or I, describes the child's manner or form of acting.

R - Rejection: Refuses input, either actively or passively, by ignoring, avoiding, rejecting or negating. He either refuses to let something into his world, or behaves so as to eliminate something that is there.

R_1: Ignores intrusion and continues activity; not necessarily consciously ignoring; child may be genuinely unaware. An R_1 code implies continuation of ongoing activity. Child gives no behavioral indication of awareness. Child may or may not be aware.

Criterion

Something occurs near the child which observer feels would be noticeable to most children and the child gives no indication of being aware; he simply continues the activity in which he is engaged. Does not apply where a group has adjusted to noise of airport traffic patterns, or a busy street (note this in comments).

Examples

Three children rush noisily up to carpentry table close to John. John appears to take no notice and continues hammering.

Teacher stands at swings loudly telling child to "tell John you want a turn". Child B continues swinging, eyes straight ahead, apparently oblivious.

Child playing near John, calls loudly, "Hey, watch me! Watch me!" John takes no note, continues own activity.

Teacher says 'Time for juice"; John continues water play.

R_2: Avoids intrusion; the child alters his position so as to eliminate, minimize or avoid intrusion.

Criterion

Child makes no demands on others, but only on himself; screens or protects self from input.

Examples

During conversation, Child A looks away from other person's face and stares at the ground.

During story time, several children near John begin poking and shoving each other. John gets up and moves away to edge of group.

Several children rush noisily up to carpentry table. John, who has been hammering, moves away to nearby fence.

Child places himself behind teacher during singing or other activity.

R_3: Active elimination or negation of intrusion, suggestion, direction, etc. The child acts so as to alter someone or something else, not himself. His obvious intent is to eliminate, negate, refuse. Child acts to eliminate something from his immediate surroundings which he does not want there.

Criterion

Child actively rejects or pushes away. If accompanied by strong feeling or pushing, hitting, code R_4.

Examples

Child reaches for John's cupcake. John says, "Stop that!"

Child removes his juice cup and shakes head as teacher leans over to pour juice.

Child says, "You be the baby." Mary says, "No."

Child takes Mary's dough and Mary takes it back.

R_4: Aggressive rejection; R_3 which contains active aggression and/or strong emotion, pushing, shoving, hitting.

Criterion

Action goes beyond bounds of socially acceptable rejection.

Examples

In response to child's grabbing his cupcake, John says, "Stop that", and punches child.

Teacher says, "John, sit down." John says, "No", and kicks at teacher.

If child explodes into temper tantrum, code U.

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T - Thrusting: Thrusting outward, initiative; provides new or additional input by actively intruding, seeking, selecting, initiating, or offering.

Criteria

Child is not acting in immediate response. T is for independent initiating. Can be with or without words.
Child may or may not be acting in response to previous input. In either case the initiating quality and/or provision of new input is emphasized.

T_1: Simple physical activity, walking, running, climbing, trike riding, swinging, etc. Code here when behavior is only simple physical activity. Mastery is usually so complete that concentration is not required. Code here unless T_3 (testing, selecting) or I (integrative) behavior definitely is present.

Criterion

The activity to be coded is not the subject of the activity segment. If trike riding is the subject of the activity segment and is pursued with concentration, code I_2. If only to get to another part of yard, or momentary, code T_1.

Examples

Walking, running, swinging, climbing.
If child speaks during activity, code what he is saying.
When child is walking away from a boisterous sub-group, code R_2.

T_2: Gives orders, tells someone what to do and/or how to do it.

Criteria

Is not in response to a request, but initiated independently.
If the initiation is not egocentric and structured with due regard to context, code I_5.
Child initiates and dominates.

Examples

Child helps another child with his puzzle.
Child tells children to "stay away from the rabbit".
Code T_2 if child takes over with no regard for wishes of other child. Code I_5 if child shows recognition of other child's wishes in regard to help.

T_3: Initiating, thrusting, probing, choosing and selecting activities which are neither accidentally or intentionally disruptive.

T_3 continued

T_{3a}: Task Child selects an activity or object, probes or tries it out. Finds something to do. Looks for something to do by active searching.

Criteria

Play theme has not yet emerged.
Unlike T_1, T_3 implies initiation. I's (integrative) imply more recognition of and response to context, relationships and ongoing theme.

Examples

Child looks through toy shelves or box of blocks.
Child tries out stability of ladder.
Child chooses trike.
Child walks to vehicle area (T_1) and climbs onto a trike (T_3) then backs wheels of trike, which have caught on table legs (T_7).
Child gets truck off shelf.

T_{3b}: Affect, to initiate social contact, to attract attention.

Examples

Child walks up to someone and says "Hello".
Child joins a group.
Child yells from top of jungle gym.

T_4: Aggressive intrusion, intentional behavior which is explosive, disruptive, or out of bounds.

T_{4a}: Playful, aggression which has exuberant energy-releasing character.

Examples

Child knocks down block tower he built himself.
Child pounds clay fiercely.
Child throws arms around another child, gives bear hug.
Horseplay, teasing, competing.

T_{4b}: Hostile, playful component appears absent.

Examples

Child hits another child, not R_4.
Child grabs another child's puzzle.
Child bites another child.

T_5: Asks for assistance from others.

Criterion
Must make intent reasonably clear. If statement of problem is addressed to no one in particular, code T_6.

T_{5a}: Task oriented, asks for information or help.

Examples
Child asks, "Where are the nails?"
Child asks, "Where does this (puzzle) piece go?"
Child says (to teacher), "This paste won't stick."
If said to self, code T_6.

T_{5b}: Affect oriented, asks for comfort, affection or reassurance.

Examples
Crying child comes to teacher.
Child asks, "Is my picture good?"

T_6: Gives information, opinion.

Criterion
Child is not in response. He initiates independent of context.

T_{6a}: Task, or other oriented.

Examples
Child announces, "My cat had kittens."
Child talking about own puzzle, says, "This piece goes here."

T_{6b}: Affect oriented, states or expresses feeling, opinions, likes or dislikes.

Examples
Child exclaims, "You're a dumbell!"
Child cries.
Child says with pride, "Look what I made!"
Child laughs at other child who stumbles.

T_7: Unintentional intrusion; the child accidentally intrudes on others or the physical setting in such a way that disruption occurs. Although his action may be annoying or destructive, he is not expressing anger, or trying to elicit attention or help. He is simply unaware, inattentive, or inept in that particular situation.

Criterion
Unintended disruption must occur as result of child's action.

T_7 continued

Examples
Child catches trike wheels on table leg.
Child knocks over something accidentally.
Child loses balance when climbing.
Child hits other child with shovel while digging.
Child drops play dough on ground.

E - Responsive, receptive: takes account of immediate or just previous input, either passively by receiving, or actively by matching response to input.

E_1: Perceptually receptive, listening, watching, scanning.

Criteria
Child is visually alert; if attending to internal stimuli, code U.
If the E_1 is sporadic or combined with T_1, code TE.
If child's attention is perfunctory, code E_3.

Examples
Child watches as other children converse.
Child stands in treehouse scanning the yard.
Child looks at activity, taking it in, before beginning.

E_2: Shapes behavior directly to input; obeys commands and suggestions. Cooperates or complies with requests and suggestions. Imitates.

Criterion
Child must shape his behavior to request or model, cannot be spontaneous.

E_{2a}: Obeys, cooperates

Examples
Child picks up toys on request.
In response to teacher asking who would get juice, child leaps to get it.

E_{2b}: Imitates

Examples
Child rolls a clay snake, obviously copying another child.
Child mimics another child.
Child copies teacher's hand motions during song.

E_3: Superficial or automatic response for purposes of politeness or social routines.

Criterion
Response can be considered almost automatic, requires little effort. Child cannot leave field and passes time.

Examples
Child throws paper towel into wastebasket.
Child waits for turn, not perceptually active (E_1).
Child gives a "yes" in response to, "Did you wash your hands?"
Child sits in group, but is not paying attention and not attending to internal stimuli or focusing on anything else.
Child says, "Hi" in response to teacher's greeting.

E_4: Receives rejections, or frustration, or pain.

Criterion
Child must give some indication of recognition of undesirable input. He may or may not respond with anger or rejection. If child is merely startled, but continues activity, do not code E_4.

Examples
Child receives scolding.
Child hits thumb with hammer.
Child receives blow from another child.
Child realizes that he cannot get something to work.

E_5: Receives positive input, help, information, praise or comfort.

E_{5a}: Task oriented, directed to ongoing activities.

Examples
Child accepts help in fitting piece into puzzle.
Child receives more paste from teacher.
Child is pushed on swing.

E_{5b}: Affect oriented, directed to feelings.

Examples
Child sits on teacher's lap and lets teacher comfort him.
Child smiles as teacher or another child praises work.

E_6: Responds to questions, etc., in response, gives information. If answer is incorrect, star *.

Criterion
Answer is shaped to input; main purpose appears to be information exchange.

E_6 continued

Examples

In response, child tells teacher where the paint is.

In response, child explains to another child that his brother goes to school.

E_7: Perceptive, reflective; child is non-thrusting but shows evidence of being involved in an inner process. Appears to be responding through his senses to something in environment. Observed clues include postural cues or reaching or sensing activity in one or more sense channels.

Examples

Child lies on his back in cargo net while it is swinging. The slight volitional movement is centered around balance center in central back region, and activity continues longer than the time required to take a position from which he will not slip.

Child puts finger in paint can. Holds it there, then moves it only enough to perpetuate the tactile sensing situation of paint moving against skin.

Child listening to story shows initiative movements or postural identification with action being described, but continues central attention toward story teller.

TE: Indeterminate; child's behavior may look somewhat like T, somewhat like E, but seems unclear, indecisive, less focused, neutral, or "blah".

Criterion

Not clearly T_1 or E_1. If child is clearly passing time, code E_3.

Examples

Child looks around while fingering collage materials.

Child sits on trike and is intermittently riding and looking.

I: Integrates; action shows both initiation and response to context. Response is individual, but fits into the continuity of action.

I_{1a}: Shows recognition of built-in constraints; problem solving. Elaborates in a closed situation; behavior involves both response and initiation, implying skill in a task which has right and wrong aspects, such as puzzles, or matching games. In so doing may show mastery of culture's cognitive conventions, such as math and other symbol systems.

I_{1a} continued

Examples

Child counts pieces in a collage.
Child fits piece into puzzle.
Child sees that trike is not pulling wagon properly and unhooks rope from around wheel.
The saw sticks in the wood. Child works carefully to get it unstuck.
Child says, "We have five animals at our house: a dog, a cat, two mice and a guinea pig."
Child successfully puts toy together after turning a piece around.
Child says, "Four is more than three".
Child says, "That's the letter, 'C'".

I_{1b}: Copes effectively with social constraints.

Criterion

Child spontaneously shows understanding of the social system and/or effectively asserts own desires within social system.

Examples

Teacher says, "I want everyone to wash up now". Child says, " I just washed when I went to the bathroom. Can I read a little longer?"
Teacher is telling the children there will be juice and cupcakes to frost at the big table in the yard. Some children go to the table immediately after being told (E_2). John continues riding his trike, all the while monitoring the getting-ready table. Cupcakes are passed around, frosting is placed on the table, sticks for spreading are passed around. John goes to the table at exactly that point in time when he will have to do no waiting to begin the activity, and still will begin the activity at almost the same time as the rest of the children (I_{1b}).

I_2: Child attends with concentration to the activity named by the activity segment. (See "Coding the Content of the I_2", p. 22.)

Examples

Activity segment, block building. Child adds blocks to tower which he and another child are building.
Activity segment, digging. Child digs channel for water to go further through the sand.

I_2 continued

Examples
At lunch time, child attends to eating.
Activity segment, swinging. Child pumps on swing.
Activity segment, trike riding. Child rides trike with enthusiasm.

I_3: Child adds something new, a suggestion, a play idea, a physical prop.

Examples
In response to suggestion that they are sailors on a ship, child says, "Yes, and over there is a sea serpent."
Child adds water to sand pile.
Child says, "Hey, we could build a skyscraper."
Child adds circles to a collage which had only squares.
If child or children then use the suggestion to structure or restructure, code I_5.

I_4: Shows mutuality in social interaction.

Criterion
Interaction must be shared and lack domination.

I_{4a}: Reciprocity

Examples
Children swing together inventing a song as they swing.
Child whispers and giggles with child sitting next to him.
Children talk together on play telephones.

I_{4b}: Offers sympathy, help, affection

Examples
Child comforts another child who is crying.
Child offers to share.
Child puts arm around another child.
Child displays tenderness to an animal.

I_{4c}: Hostile reciprocity; child is engaged in shared interaction which has an aggressive or hostile component.

Examples
Two children swing together calling insults to each other.
Children tease each other by swiping puzzle pieces, blocks, etc.
Children make a game out of punching and poking each other.

I_5: Sees pattern or gives structure; responds in ambiguous situation with novel but fitting constraints; imposes self-generated "figure-ground" on generally amorphous or ambiguous setting.

Criterion
Child must call attention to pattern which was not formally present.

Examples
Child says, "Look, if you turn it this way, it could be a roof."
Child holds up wood that he sawed at angles and says, "Look, it's a triangle."
Child says of glass of bubbles, "Hey, this looks like beer."

I_6: Testing, examining; child actively observes, tinkers.

Criterion
Child does more than choose (T_3) or handle (T_1 or TE). Shows real curiosity and attentiveness.

Examples
Child looking at baby chicks hatching, asks questions about the beak, the heat, etc.
Child pulls on cargo net and watches how the net moves in response to his pull.
Child carefully examines a truck, checking out each moving part.

U: Child attends to self, sucks thumb, has temper tantrum, cries.

Criterion
Child does not appear to be attending to outside stimuli.

X: Cannot code.

Second Letter Coding: Direction of Attention

The second letter, A,C,E,G or D, describes the child's direction of attention during the first letter coding.

A: to adult
C: to child
E: to environment
G: to group
D: dual (Child is clearly paying attention to more than one of the above categories. For example, a child talks animatedly while working a puzzle.)

Third Letter Coding: Continuity of Activity

The third letter (C, R, N) describes the child's continuity of activity.

C: Continued; connected or continued, the present episode related directly, logically, sensibly to preceding episode.

Example
At carpentry table child picks out a piece of wood (New), then picks up a hammer (Continued).

R: Return; not connected to just-previous episode, but is connected to something that occurred earlier.

Examples
Paul leaves carpentry table, climbs ladder on tree. He then returns to carpentry table and gets hammer and nails (spontaneous to the setting and a Return).
Steven follows Frank around, interacting. Steven is distracted by another group. Steven looks around, speaks to teacher in group; then leaves and runs to Frank and continues interacting (spontaneous to an adult and a Return).

N: New; to observer's knowledge, has not occurred before. If neither C or R, then N.

Example
Steven darts from swing to jungle gym to jumping board. Each is coded as New.

Adult input directed to the child also was recorded (, ,).

 Adult instigation to group; a direction or instruction addressed to three or more children.

Examples
Adult says, to group, "What color is this?"
Adult says, to group, "You can use the wagons, too."

 Adult pressure to group; a request (which is to be followed) addressed to three or more children.

Examples
Adult says, to group, "Time for juice."
Adult says, to group, "Pick up the blocks."

> Adult instigation to individual; a suggestion directed to sample child or sample child and companion.

Example
Adult says, "James, do you want to go with us?"

>> Adult pressure to individual; a request (which is meant to be followed) directed to sample child or sample child and companion.

Examples
Adult says, "James, time for juice."
Adult says, "James, put your shoes on now."

Activity Segment Descriptors: Second-Level Coding

All second-level coding is based on the identifcation of the segment structure. Four types of identification are possible. Only those involvements which last four or more minutes receive second-level coding as activity segments.

1. An activity segment is any involvement, lasting four minutes or longer, with the environment or with another child or adult which can result in an I_2. (Color code black.)

2. An abortive activity segment is an involvement which meets the criteria for an activity segment except that it is less than four minutes in length. (Color code red.)

Transitions describe those segments which occur between play or scheduled activities. Transitions fall into two categories. (Color code green.)

3. Non-official transition (coded NO next to the transition color line) is not essential to the operation of the setting; initiated by internal stimuli or chance events in the setting; not planned by adults or not essential to setting maintenance.

   Examples
   Child gets drink of water.
   Child wanders around yard after being displaced from jump board by two boys.

4. Official transition (coded O next to the transition color line) is required by adult or essential to setting maintenance.

Examples

Teacher supervises group toileting.
Teacher gets children together to go to the TV room.

If an official transition is four minutes or longer in length, it is coded as an activity segment.

All groupings of activity which meet the definition of an activity segment receive second-level coding. The coding of the descriptors or attributes of activity segments is concerned with the nature of the matrix within which the activity occurs and with the child's relation to the activity.

I. Matrix structure

A. Program structure

1. Free choice: Children are free to choose among all activities available in the room or yard such as swings, sand pile, climbing equipment, etc. The teacher may or may not have made prior preparations.
2. Teacher-directed individual activity: The teacher has planned an activity in which all children are expected to participate, but which is carried out individually by each child such as painting, pasting, puzzles, or drawing.
3. Teacher-directed group activity: The teacher leads an activity in which the children participate as a group, such as story time, music. Children are expected or required to participate.
4. Teacher-directed group games: The teacher leads an activity in which the children participate as a group, such as rhythm games. Children are expected or required to participate.
5. Eating.
6. Teacher-selected individual activity: The teacher decides for each child the activity in which he is to participate.
7. Toileting, wash-up.
8. Structured transition (official transition), clean-up (preparation).
9. Other.

B. Physical setting structure

1. Place (always coded)
   1. Yard or room as a whole, most or all
   2. Rockers, swings
   3. Slides, poles, balance boards, jumpers
   4. Climbers and bars
   5. Vehicles, trikes, wagons, barrows
   6. Empty house type, tunnels, crates, barrels
   7. Digging area
   8. Tables, floor, or contained yard space
   9. Other

2. Props, complex (code only if present)
   0. No props, does not apply
   1. Props for house play and/or pretending
   2. Art props
   3. Constructing (other than art)
   4. Cars, trucks, small figures of people or animals
   5. Digging and gardening equipment
   6. Animals, live and growing things
   7. Exploring props, books, instruments, music, or science
   8. Structured games, puzzles
   9. Other

3. Props, super unit (if props exceed complex level, code here.)
   0. No props, does not apply
   1. Props for house play and/or pretending
   2. Art props
   3. Constructing (other than art)
   4. Cars, trucks, small figures of people or animals
   5. Digging and gardening equipment
   6. Animals, live and growing things
   7. Exploring props, books, instruments, music, or science
   8. Structured games, puzzles
   9. Other

C. Play structure

0. Does not apply
1. Open - much mobility (large muscle)
2. Open - indeterminate
3. Open - limited mobility (small muscle)
4. Closed - much mobility
5. Closed - indeterminate
6. Closed - limited mobility
7. Relatively open - much mobility
8. Relatively open - indeterminate
9. Relatively open - limited mobility

D. Social structure

1. Alone
2. One friend, best friend
3. Child(ren) present (code here if only one child, but contact is casual)
4. Adult present
5. Adult and children present; entire group and adult
6. Variable

E. Teacher structuring

1. Teacher approach
   0. Not pertinent
   1. Exceptionally sensitive
   2. Friendly
   3. Neutral
   4. Irritable, insensitive

2. Teacher emphasis (This is a two-column item; you may choose any two.)
   0. None of the following; does not apply; cannot code
   1. Improving sensory-motor skills
   2. Rules of social living (control and restraint)
   3. Consideration and mutuality
   4. Formal "cognitive" skills
   5. Imparting information; knowledge and awareness
   6. Pleasure and delight, awe and wonder
   7. Dealing with emotion
   8. Creativity and experimentation
   9. Emphasis clearly multiple; cannot select one

3. Teacher influence on activity structure
   0. Does not apply
   1. Tries to open inherent structuring
   2. Lets be inherent structuring
   3. Tries to close inherent structuring

F. Source of initiation (two column) Source of termination

Source of initiation	Source of termination
1. Teacher pressured	1. Teacher pressured
2. Teacher instigated	2. Teacher instigated
3. Initiated by another child	3. Initiated by another child
4. Spontaneous	4. Spontaneous
5. Unclear or other	5. Unclear or other

G. Teacher-child ratio (Record actual number of teachers and children directly involved in the activity segment.)

II. Child activity segment content (Code 1st, 2nd, and 3rd choice if necessary)

1. Non-play
   - 1.1 Not active
   - 1.2 Transitional
   - 1.3 Self-care, toilet, wash
   - 1.4 Work, clean-up, preparation
   - 1.5 Eating
   - 1.6 Expressing or receiving help with anger, fear, discomfort, pain
   - 1.7 Receiving negative input, scolding
   - 1.8 Resisting input, testing limits
   - 1.9 Other; trying to cope with input; captive audience

2. Play #1
   - 2.1 Conversation
   - 2.2 Obtaining social contact
   - 2.3 Maintaining social contact
   - 2.4 Pretending, reality grounded
   - 2.5 Pretending, indeterminate
   - 2.6 Pretending, imagery, fantasy
   - 2.7 Pleasure and delight (no other purpose apparent)
   - 2.8 Other social
   - 2.9 Other

3. Play #2
   - 3.1 Large muscle
   - 3.2 Exploring
   - 3.3 Constructing (a product)
   - 3.4 Building
   - 3.5 Improving a skill
   - 3.6 Listening to stories, music, looking at books
   - 3.7 Singing, dancing, finger play
   - 3.8 Gaining information
   - 3.9 Other

III. Child's relation to play structure type

0. Unclear (code here if uncertain)
1. Accepts as is
2. Opens, adds possibilities
3. Closes, brings possibilities into focus, sets limits
4. Both adds and brings into focus (Code here only if both 2 and 3 clearly apply.)

IV. Activity segment structure

1. Only one activity
2. Two or more activities integrated into a whole
3. Two or more activities alternating or serial into pattern, not aimed at synthesis
4. Activity variable and aimed at synthesis; child doing all these things but varying between loose and tight integration; appears to be trying to achieve an integrated whole
5. Activity variable and child simplifies by eliminating; child loses part(s) along the way and does not seem concerned with reintegration

V. Style of functioning (Later deleted because of low reliability)

1. Very effective
2. Effective
3. Moderately effective, resigned to fate (passive)
4. Moderately effective, trying something (active), trying to alter
5. Mild counteraction
6. Does not handle (just can't figure out what's going on)
7. Conflict
8. Withdrawal
9. Combination of above

VI. Interference with functioning

0. Does not apply
1. Purposes or task demand exceeds child's skill
2. Purposes or task demand does not challenge child's degree of skill
3. Teacher behavior interferes
4. Physical setting interferes (crowded room, not enough toys)
5. Scheduling interferes
6. Other children interfere
7. Combination of above

VII. Affect

1. Great pleasure
2. Moderate pleasure
3. Neutral
4. Moderate distress
5. Distress
6. Variable, ambivalent

VIII. Degree of involvement (two column) Change in involvement

1. Very involved
2. High
3. Moderate
4. Minimal
5. Low

0. No change
1. Rising
2. Falling
3. Variable

IX. Child monitors surroundings (Later deleted)

1. High
2. Moderate
3. Low

Coding the Content of the I_2

The I_2 mode coding describes the child's activity as attending to the content of the activity segment. The content receives a code as follows.

1. Listening (E_1), or listening and watching (books, records, TV)
2. Watching (E_1) people, events in the real world
3. Large muscle activity (T_1): trike riding, swinging, climbing, running, etc.
4. Imitation of prescribed patterns (E_{2b}): group recitation, group singing, group movement
5. Exploring the natural world: animals, bugs, plants, water, mud
6. Creative exploring
   a. Structured, closed: blocks, peg boards, tinker toys, flannel boards
   b. Standard: dough, paint, collage, sand
   c. Unusual: melting ice in corn popper, making snow out of soap
7. Conversation
   a. Formal group b. Informal c. Affectionate
8. Testing limits (If a combination of a and b, code as 8.)
   a. Social b. Skills
9. Dramatic play
10. Doing work
11. Cognitive activities
    a. Standard: Simon says, learning letters and numbers, phonics, puzzles
    b. Unusual: cooking, playing games such as Candyland, problem solving
12. Structured transition, toileting, washing
13. Eating
14. Receiving punishment, scolding

We are assuming that any of these may include social interaction. Testing limits takes precedence over other categories.

Procedures for Observation

The Day Care Environmental Inventory has been used with the following operational procedures. Each observer was supplied with a clip board containing forms for coding and a transistorized timing device with an ear plug designed to produce a click every 15 seconds which was audible only to the observer. After each click the observer coded what had transpired during the last 15 seconds. (For precoded observation sheet, see Appendix A .) The second-level coding was filled in after the observation was completed. At that time the activity segment structure also was indicated by use of colored pens. In centers, observers were systematically rotated. Each observed for 40 minutes and then took a 20-minute break to do some of the preliminary second-level coding. When observing in homes, we found it necessary to extend this period to one hour. To maintain the attention required by this code for one hour is difficult, but after considerable experience, we did find it possible.

During the observation the observer attempted to remain as unobtrusive as possible. To avoid conversation, the observer maintained silence and did not invite conversation from children. The ear plug provided both a source of curiosity which invited children's questions and a source of clarification of the observer's presence. Children often asked about it and, when possible, they were given an immediate explanation. When this would interfere with the observation, the observer often said briefly, "I'm working and it tells me when I have to write something down. When I'm not working, I will show it to you." Children seemed to accept the object as a visible demonstration that the observer did, in fact, have work to do and usually this ended the conversation. Many times, on completion of her visit, the observer would let each child try out the ear plug and listen to the click.

The Effect of Observer Presence

The attention paid to observers varied markedly among settings for reasons which often were unclear. Our presence appeared to have the least effect on large settings where there were a variety of play opportunities and many children. Observers occasionally were the source of attention in centers, but usually this was short lived. Observers found it much more difficult to remain unobtrusive in homes because of the much smaller number of children present and probably also because it is unnatural to ignore someone who enters a home setting. If no other children were present, the child often was quite persistent in his efforts to engage the observer in his play. Out of 268 activity segments in homes, 6 involve the observer. No segments in centers (N = 1293) involved observers.

II

RELIABILITY

Considerable attention was given to reliability. During the pilot phase, observers were paired for all observations until we were satisfied that further clarification was unlikely or that reliability was satisfactory. Reliability has been systematically checked as the study progressed, both because of the possibility of observer drift and because of a need to check reliability under the variety of conditions encountered in centers. Three reliability checks, using different observer pairs, were scheduled for each sample center. In addition, another fifteen reliability checks were conducted at the Pacific Oaks Children's School during home observations because it appeared that scheduling them in homes would be too obtrusive.

Data are reported on a total of 56 paired observations lasting from approximately 10 to 20 minutes, all obtained during the stage of active data collection. Although we have experimented with more sophisticated ways of reporting reliability and some data are presented using Cohen's coefficient of agreement, we still feel that a simple percentage of agreement or disagreement has been more informative to us, and communicates better to the reader the exact nature of our reliability, than do some of these more formal procedures. We would like to remind the reader that our data collection did not go through a two-step procedure of recording-transcribing, then coding, which always involves a loss of reliability with each step. To control for observer bias, the five observers were systematically rotated throughout the study.

First-Level Fifteen-Second Coding

First-level coding, recorded every fifteen seconds, contains four types of data: child's mode of activity, direction of attention, continuity of attention, and adult input. Table 1 presents the mean disagreement among observers for three of these types of data. (See page 25.)

Child's Mode of Activity

Table 2 shows the percent discrepancy for each category in the modes of child approach. These figures were obtained for each observer by dividing the frequencies in each category by the total frequency of episodes recorded. The amount of disagreement between observers was then computed by obtaining the difference between observer A and observer B in each category for every paired observation. A mean was computed for the total number of paired observations. (See page 26.)

TABLE 1

MEAN DISAGREEMENT BETWEEN OBSERVERS BY
CATEGORY OF CHILD'S ATTENTION AND ADULT INPUT

(N=56)	MEAN DISAGREEMENT
Child's attention is directed to:	
Adults	5.8%
Children	6.8
Environment	9.9
Group	3.6
Dual	6.0
Child's attention is:*	
Continuing	5.1
Shifted	3.4
Returned	1.8
Adult input to individual child	
Pressure	1.1
Initiation	1.4
Total	1.7
Adult input to group	
Pressure	0.5
Initiation	1.1
Total	1.0

*N=41

Cohen's Coefficient of Agreement (Cohen 1960) was computed for each paired observation for the major categories of Rejecting, Thrusting, Responsive and Integrative modes. This Coefficient always is lower than a percent of agreement since it accounts for chance agreement. For the 56 observations, Cohen's k = 80.7%.

TABLE 2

MEAN PERCENTAGE OF DISAGREEMENT BETWEEN OBSERVERS
IN 56 PAIRED OBSERVATIONS

CATEGORY	% DISAGREEMENT
Rejects	
R_1 Ignores instrusion	0.7%
R_2 Avoids instrusion	0.2
R_3 Active elimination	0.7
R_4 Aggressive rejection	0.1
Total R's	1.2
Thrusts	
T_1 Simple physical	1.9%
T_2 Gives orders	1.2
T_3 Initiating:	
T_{3a} Task	3.0
T_{3b} Affect	1.3
T_4 Aggressive intrusion:	
T_{4a} Playful	0.5
T_{4b} Hostile	0.3
T_5 Asks for assistance:	
T_{5a} Task	0.8
T_{5b} Affect	0.4
T_6 Gives information:	
T_{6a} Task	2.7
T_{6b} Affect	1.5
T_7 Unintentional intrusion	0.6
Total T's	6.4
TB Indeterminate	2.8%
U Undifferentiated	0.5%

CATEGORY	% DISAGREEMENT
Responds	
E_1 Perceptually responsive	4.4%
E_2 Shapes behavior to input:	
E_{2a} Obeys, cooperates	1.3
E_{2b} Imitates	0.8
E_3 Superficial, automatic	0.7
E_4 Receives rejections	1.2
E_5 Receives help or info.:	
E_{5a} Task	2.2
E_{5b} Affect	1.0
E_6 To questions	1.5
E_7 Perceptive, reflective	0.8
Total E's	4.9
Integrates	
I_1 Both initiation and response:	
I_{1a} Shows recognition of built-in constraints	2.3%
I_{1b} Copes effectively with social constraints	0.5
I_2 Attends w/ concentration	7.4
I_3 Adds something new	1.7
I_4 Mutuality in social interaction:	
I_{4a} Reciprocity	0.2
I_{4b} Offers sympathy, help	0.3
I_{4c} Hostile reciprocity	0.1
I_5 Sees pattern, gives structure	1.5
I_6 Testing, examining	1.8
Total I's	7.6

Second-Level Coding of Activity Segments

Recognition of Activity Segments

Since much of the analysis is based on the distinction of activity segments, the reliability with which they can be identified is important. As described, the observer marks the running record of the child's activity into segments. An activity segment must last at least four minutes, otherwise it is coded as abortive. The time in between activities is labeled as transition. If the transition is imposed by the adult as part of the overall program structure, it is labeled official. If child-selected, it is labeled as unofficial.

In the 56 paired observations, 66 activity segments were identified by both observers, three were identified by only one observer giving 95.6% agreement using Wright's Fstimate of Accuracy (Wright, 1967) 2/. The agreement on length of segment also was close, averaging 93.9% agreement.

There was less agreement on transitions primarily because they are often very short. Out of 62 transitions, agreement was 79.4% on occurrence with 91.8% agreement as to length. The average time involved in those transitional segments which were not recognized by both observers was 1.03 minutes, indicating that the disagreement was occurring almost entirely over very short transitions.

Abortive segments were recognized 94.5% of the time (N = 55). Agreement on their length was 94.2%. The three disagreements are carried over from the activity segment recognition where one observer labeled the segment as an activity while the other labeled it as abortive. These errors were due to the arbitrariness of the activity segment definition, since an activity lasting less than four minutes is coded abortive. If one observer records three and three-quarter minutes of an activity and another codes four minutes, there is disagreement on the total four minutes.

2/ For observer A and observer B:

$$\text{Wrights' Estimate of Accuracy} = \frac{\text{Episodes marked by A marked also by B}}{\frac{\text{Episodes marked by A + those marked by B}}{2}}$$

Activity Segment Descriptors

Table 3 shows the reliability of activity segment descriptors. When ordinal measures are used, partial agreement indicates a one-point discrepancy in rating. A dash inciates that this category is not applicable.

TABLE 3

PERCENTAGE OF AGREEMENT ON
DESCRIPTORS OF ACTIVITY SEGMENTS

DESCRIPTORS (N = 56)	PERCENT AGREEMENT			
	Agree-ment	Partial	Disagree-ment	Unclear
Program structure				
Whether free choice, teacher directed group, individual, etc.	82.2%	---	17.8%	0.0%
Physical setting structure				
Whether play equipment is simple, complex or super unit	73.2	25.0*	1.8	0.0
Whether yard as a whole, swings, vehicles, etc.	87.6	---	10.7	1.7
Whether there is a complex unit involved	85.8	---	12.5	1.7
Constraints of Play Structure Alternatives				
Whether play structure permits much (open) or limited (closed) choice	57.1	37.5	5.4	0.0
Constraints of Play Structure Mobility				
Whether large or small muscle or indeterminate	67.8	30.3	1.9	0.0

(continued on next page)

* Complex and super were confused 16% of the time. Simple and complex were confused only 9% of the time.

(TABLE 3 continued)

DESCRIPTORS	PERCENT AGREEMENT			
	Agreement	Partial	Disagreement	Unclear
Social structure				
Whether child was alone, with one friend, with children, with adult and children	71.4%	---	28.6%	0.0%
Origination of activity segment				
Whether started by adult pressure, instigation, by another child, or spontaneous	92.8	---	7.2	0.0
Termination of activity segment				
Whether stopped by adult pressure, instigation, by another child, or spontaneous	87.5	---	12.5	0.0
Teacher influence on activity structure				
Whether teacher opened, closed, etc.	59.0	17.9	1.7	21.4*
Teacher approach				
Whether teacher manner was sensitive, friendly, etc.	64.3	25.0	3.6	7.1
Teacher content				
Agrees lesson was taught				
First choice	69.7	---	30.3	0.0
Second choice	76.8	---	23.2	0.0
Content of lesson taught				
Choice I	46.3	35.8	17.9	0.0
Choice II	55.3	21.4	23.2	0.0
Agreement on content of activity				
By rank Choice I	96.4			
Choice II	78.5			
Choice III	66.1			
By content Rank I	53.6	26.8	19.6	0.0
Rank II	30.3	51.9	17.8	0.0
Rank III	51.8	23.2	25.0	0.0

(continued on next page)
*Unclear whether teacher had any influence.

(Table 3 continued)

DESCRIPTORS	PERCENT AGREEMENT			
	Agreement	Partial	Disagreement	Unclear
Child's relation to play structure				
Whether child opens, closes (i.e., tries to change) or lets be	57.2%	32.1%	3.6%	7.1%
Activity segment structure				
Only one activity versus two or more	64.2	---	35.8	0.0
Child's style of functioning				
Whether effective, passive, withdrawn, etc.	71.5	---	28.5	0.0
Interference with functioning				
Whether task demands are too great or teacher behavior or other factors interfere	76.8	---	17.9	5.3
Affect				
Child's pleasure, distress	45.1	52.9	2.0	0.0
Degree of involvement				
Whether child was highly, moderately or minimally involved	59.0	39.2	1.8	0.0
Change in involvement				
Whether no change, rising, falling or variable	71.4	---	28.6	0.0

I_2 Coding

The content of the I_2 coding was coded from one of twenty-one choices. Seventy-five paired codings from a random selection of segments yielded 86.7% agreement. Thirteen codings from paired reliabilities produced 84.6% agreement.

Teacher-Child Ratio

As part of the second-level coding of activity segments observers were instructed to record teacher-child ratio in one of three ways:

(1) variable, if the pattern was changing during the activity; (2) not relevant, if teacher was not involved, or if the pattern was unclear; (3) specify the number of adults to children such as 1:2 or 2:24, etc. These ratios were recorded into the following groupings:

1:1	1:8, 1:9 or 1:10
1:2 or 1:3	1:11 through 1:15
1:6 or 1:7	1:16 or more

Based on these ratios our reliability for 31 paired ratings was 83.9% agreement and 12.9% disagreement

Reliability Checks as a Method for Studying Environmental Ambiguities

We have given much attention to the problem of reliability, not only for its importance to the final interpretation of data, but as a useful method, in its own right, for elucidating the ambiguities within the environments under observation. The circumstances which surround problems of reliability have been continuously examined, and fruitful hunches have arisen from this form of monitoring.

Much of the time observers have been in close agreement about distinctions which seemed clear and unmistakable. However, certain configurations of activity have consistently presented insoluble problems. These difficulties are most pronounced when a series of orienting cues are ambiguous.

In this study, as in the observational study of teachers (Prescott and Jones, 1967), we are struck by the difficulty in observing in open, as opposed to closed, structure centers. Disagreement on the amount of time spent in activity segments was 13% in open structure centers as compared to only 5.3% in closed structure centers. An examination of the circumstances where disagreement was highest (6 observations) proved instructive. The most spectacular disagreement of 53% was partly due to the fact that the reliability observer walked in "cold" to a complicated series of child involvements which were related to events that only the regular observer had seen. This entire paired observation was viewed discrepantly. The other three large disagreements were clearly due to ambiguities in the setting. Observers judge the beginning and end of activity segments by the physical location, the activity involved, and the social constellation. Most of the time at least two of these variables shift markedly to indicate the end of a segment. When only one factor shifts the distinction is less clear. The following examples all present problems to the observer in

deciding whether an activity has ended and a new one begun.

(1) The activity setting of juice time had ended and toileting had officially begun. However, the child being observed was the only child still munching his cracker.

(2) A child is playing in the sandbox. Still sitting in the sand, he empties the sand out of his shoes before moving to another activity.

(3) A child stops swinging but continues to talk to a friend and periodically fools with the swing before leaving.

In homes, this difficulty was even more pronounced, partly because the reference points for assessing the activity segment which are provided by a group of same-age children in centers are missing, and partly because most homes impose much less arbitrary scheduling. For example, two children, age 18 months and 4 years, are sitting watching television. The observer confidently labels the activity segment as watching TV. After a few minutes the children begin to pay attention to each other as well as to the TV. Finally they end up tussling. The TV is still on, but they are no longer paying attention. It is most difficult to specify, under this condition, the precise limits of the activity segment. In a group setting, the child would be required to leave the area or to attend to the TV or to behave as if he were watching it. None of these options would create uncertainty about the segment.

We suspect that adults, in decision-making roles with children, often are troubled by the same ambiguities which gave us problems with reliability. The solution can be found either in the direction of stopping and eliminating all of the "slopiness" by use of rules and proprieties which force clear, clean-cut transitions, or in the direction of choosing to ignore the rough edges and placing value on freedom and self-regulation. Adults who are exceedingly competent in dealing with children appear particularly skilled in monitoring and continually reassessing ambiguities without the need to arbitrarily ignore or eliminate them.

Another persistent problem has been observer confusion between teacher closing or letting be the inherent structure of an activity. This difficulty seemed to arise when the teacher failed to respond to what the observer saw as a potentially growth-producing move on the part of the child. For example, the teacher is teaching about the color "red" and asks children to point to various red objects. The observed child obviously can identify red and points to an off-color red in his friend's shirt and asks what color that is. The teacher

says, "We are talking about red right now." In some centers this act would be perceived as closure. The observer experienced the teacher's inaction as closure. However, if the center itself clearly ruled out ambiguity, innovation, or changing the subject, the observer tended to account for this constraint by coding the same move as "letting be".

There was always the problem of the differentiating the structure which was the pertinent frame of reference. For example, if there was a story time choice offered within a larger free choice option, the observer might code the program structure as a teacher-directed group activity (story time) while the other labeled it free choice. A similar problem occurred when a teacher took his group to the field for running and then romped individually with each child. The activity had significant components of both a teacher-directed group and individual activity. As always, these ambiguities were most pronounced in open structure centers.

Throughout the study the rating of teacher impact was always a problem when the teacher was only minimally involved. If she was uninvolved, the entire section of teacher behavior was coded as not pertinent, but the precise threshold for involvement was always problematical.

A similar problem is inherent in the I_2 mode coding: child continues activity. If two observers were watching a child at a collage table, one sitting within 6 feet, the other at 15 feet, the near observer could be predicted to code fewer I_2's than the far observer (although the difference usually was small). The I_2 coding indicates continuation of activity and sometimes glosses over nuances which are seen close up. Observer fatigue can also produce an effect similar to that of distance.

Observers virtually never confused opposite ends of a continuum; i.e., open versus closed toys, limited and much mobility, child opens or closes. However, they could not easily differentiate the middle range. Conflicting cues always produced problems as did differentiation between levels of structure. As the study progressed and observers repeatedly checked their reliability we became increasingly aware of the specific factors which repeatedly will cause different readings of the setting.

III

OBSERVATION SCHEDULE FOR PHYSICAL SPACE

An assessment rating of the physical space in centers was developed in a previous study and proved useful in predicting teacher behavior (Kritchevsky, chapter 8 in Prescott and Jones, 1967). Because of this experience we assumed that spatial ratings might prove even more useful in predicting children's behavior. Ratings for the complexity of the setting and the teacher's behavior in relation to it were built into the second-level coding of activity segment characteristics. In addition to these, summary assessments of the spatial characteristics of both centers and homes have been developed. The center space schedule described here represents an attempt to expand the space assessment rating developed in the 1967 study particularly in regard to the use of inside space. 1/

Center Space Schedule

General information needed for school space rating:

1. Number of children per day or per session
2. Number of groups per day or per session
3. Teacher/child ratio
4. Number of rooms available (or group indoor spaces)
5. Number of yards available

I. Organization

The summary rating for organization is based on the rating for clarity of paths and surface coverage.

A. Ratings for organization

1. Path
   a. Clear = 1
   b. Partially clear = 2
   c. Unclear: blocked or dead space = 3
2. Fraction of surface covered:
   a. Neither sparse nor crowded, 1/2 to 1/3 covered = 1
   b. Sparse, 1/3 to 1/2 covered = 2
   c. Very sparse, less than 1/3 covered = 3
   d. Crowded, more than 2/3 covered = 3

1/ Additional information and examples of teacher's use of this rating for diagnostic purposes can be found in Kritchevsky and Prescott: Planning Environments for Children: Physical Space (1969).

B. Calculation of organization

The sum of path and fraction of surface covered equals the organization.

1. Maximum organization (a sum of 2 on the above)
2. Moderate organization (sum of 3 or 4)
3. Minimum organization (sum of 5 or 6)

II. Interest Level

A. Complexity

1. Number of simple units

A simple unit is defined as a play unit that has one obvious use and does not have sub-parts or a juxtaposition of materials which enable a child to manipulate or improvise. (Examples: swings, gym, rocking horse, tricycle.)

2. Number of complex units

A complex unit is defined as a play unit with sub-parts or juxtaposition of two essentially different play materials which enable the child to manipulate or improvise. (Examples: sand table with digging equipment; play house with supplies.) Also included in this category are single play materials and objects which encourage substantial improvisation and/or have a considerable element of unpredictability. (Examples: all art activities such as dough or paints; a table with books to look at; an area with animals such as a dog, guinea pigs, or ducks.)

Within the category of complex units, it may be helpful to differentiate among closed, relatively open, and open structure.

1 Closed complex units - both the goal and mode of relationship among the parts are constrained; e.g., puzzles, form boards, matching games. Number of alternatives are exceedingly limited.

Relatively open complex units - either the goal or the mode of relationship, but not both, is constrained; e.g., unit blocks, lego blocks, crystal climbers. Number of alternatives are greater, but not unlimited.

Open complex units - neither goal nor mode of relationship is constrained; e.g., dough, collage, sand play, water play.

Simple units are not amenable to this sort of distinction since they are not manipulative; super units seem to be inherently invariably open.

3. Number of super units

A super unit is defined as a complex unit which has one or more additional play materials, i.e., three or more play materials juxtaposed. (Examples: sand box with play materials and water; dough table with tools; tunnel, moveable climbing boards and boxes, and large crates.)

B. Amount-to-do per child

This variable provides a rating for the amount of choice available to children.

1. Number of units. A unit is a definite play area or stuff to do, regardless of whether it is simple, complex, or super.

Examples: Dough, 3 swings, and an unusually elaborate play house area, puzzles = 4 units.

2. Number of play spaces describes the number of play slots which are provided and is based on complexity of units:

1 simple unit = 1 place
1 complex unit = 4 places
1 super unit = 8 places

Example shown above: 3 swings = 3 places; dough = 4 places, the unusually elaborate play house area = 8 places, and puzzle = 4 places for a total of 19 places.

C. Novelty

1. Daily variety of equipment
   a. Five or fewer different things to do.
   b. Six or more different things to do.
2. Scheduled variation
   a. Activities appear markedly similar from one day to next, variations minimal.
   b. Program is exceedingly predictable, some rotation of activities.
   c. Daily changes in activities, although program format and space remain constant.
   d. Considerable variation in activities, space may be rearranged.
   e. Format for each day markedly different, many novel activities, space frequently rearranged.

III. Source and Amount of Intrusion

Describes who and what comes through the boundaries. Refers to permeability between school and non-school, between rooms and yards in a school, and within rooms and yards where separate groups occupy the same place. This is to be rated separately for inside and outside space.

A. Visual: what can be seen beyond room or yard.
   1. None; yard has a solid fence which prevents children from seeing out. The room is enclosed and is used only by one group at a time.
   2. Moderate; children can see beyond the fence, but there is little distracting activity. Room may be used by other groups but each group is well insulated.
   3. High; there is much of interest to see outside of the yard or room; other activities are easily visible, interesting and/or distracting.

B. Auditory: what can be heard from beyond room or yard.
   1. None or very little; the only sounds are those of the children playing within the room or the yard.
   2. Moderate; there are occasional sounds, not distracting.
   3. High; noise is decidedly loud, instrusive and frequent. For example, an outside area borders on a busy street, elementary school children play immediately adjacent to the yard, or two groups share a room, but noise from each group intrudes on the other.

C. People who belong to the setting
   1. Virtually none; teachers and children who are not members of the group seldom enter the area.
   2. Moderate; the space is occasionally entered or used as a path by others.
   3. High; many people who are not members of the group go in and out of the space.

D. People from out of the school
   1. None or very little; strangers seldom have occasion to come to the school and when visiting are isolated from the children.
   2. Moderate; there are occasional visitors or repairmen. No particular attempt is made to isolate them from the children.
   3. High; center has many visitors regularly; it may be used as a training and observation center. Parents may stay and socialize among themselves and with children. Maintenance men are frequently on premises.

IV. Seclusion Potential

A. Size of room/yard
   1. Very small
   2. Small
   3. Average
   4. Large
   5. Very large

B. Shape of room/yard
   1. Square
   2. Oblong
   3. Irregular

C. Physical boundaries
   1. Complete
   2. Partial, small part open (includes gates and doors left open)
   3. Partial, large part open, visually distinct
   4. Partial, large part open, not visually distinct
   5. Can't judge

D. Insulated potential or play units: a small area which provides insulation or "protection" for a small group of children (will easily contain 3 - 4 more children)
   Examples: A distant corner of the yard which is screened by other units or the shape of the yard.
   A play house or block building area which uses wall and/or low dividers for at least 3-sided protection.
   Large house or house-type units such as crates, where children are partially visible.

E. Individual hide units: Closely cozy "hidey" spaces, which usually have room for two children at the most, and where it is hard for the occupants to be seen.
   Examples: Barrels, small tunnels, small crates set facing away from other activity areas.
   Well-closed playhouse (room, walls, door, windows) which is hard to see into.

F. Partially screened units: Activity tables, easels set against, or very close to, walls (or fences which face low use area) so that visual input from other places is minimized; one- or two-sided construction which functions to cut down on physical and/or visual intrusion.

G. Number of single swings.

V. Softness

A. Aspects to be considered in judging softness:

Child/adult cozy furniture: rockers, couches, stuffed chairs, lawn swings
Large carpet or rug: half or full
Grass to be on
Sand to be in - box or area
Dirt to dig in
Animals to hold (especially guinea pigs)
Sling swings
Dough
Very messy materials such as finger paint, clay, mud, water added to sand
Water as an activity
"Laps"

B. Rating for softness

1. Very soft: high texture differences and messy. School has 10 or 11 of the aspects above, always including a small furry animal which can be held and an item of child/adult furniture.
2. Moderately soft. School has 8 or 9 of the aspects above.
3. Low softness, messy. School has 5 - 7 aspects listed above including something messy such as finger paint, clay or water in sand or dirt. No child/adult furniture; no furry animal.
4. Low softness, clean. School has 5 - 7 aspects listed above with no messy materials. No child/adult furniture; no furry animal.
5. Very low softness, messy. School has 2 - 4 aspects listed above including something messy. No child/adult furniture; no furry animal.
6. Very low softness, clean. School has 2 - 4 aspects listed above with no messy materials. No child/adult furniture; no furry animal.
7. Anomolous. School does not fit any of the above categories.

VI. School Policies Regarding Space Use

A. Moving in groups
   0. Does not apply
   1. Children go at will after information received from teacher
   2. Children get ready and gather in cluster at door or gate
   3. Teacher uses words "line up" but accepts cluster
   4. Teacher uses words "line up" and insists on line formation
   5. Combination of the above
   6. None of the above

B. Lunch arrangements
   0. Does not apply
   1. One group, one table, one room
   2. One group, two or more tables, one room
   3. One room, several insulated tables, several groups
   4. One room, several non-insulated tables, several separate groups
   5. Informal, floor or picnic grouping
   6. None of the above

C. Nap arrangements
   0. Does not apply
   1. Group 15 or less, vittually all insulated in some way
   2. Group 15 or less, some children insulated
   3. Group 15 or less, no insulation
   4. Group 16 - 29, some insulation
   5. Group 16 - 29, close side by side
   6. Group 30 - 45, close side by side (sardines in can)
   7. None of the above

D. Yard use patterns between 9:00 a.m. and lunch
   0. Does not apply; school has one group
   1. Groups do not merge, always use the same yard(s)
   2. Groups do merge, always use the same yard
   3. Groups do not merge, rotate yards
   4. Groups do merge, rotate yards
   5. None of the above

E. Storage patterns: availability

   Storage patterns are characterized by the following designations:

   Open: Open shelves and/or cupboards and sheds whose doors are open when children are in the setting. Stuff is visible and mostly reachable. Virtually nothing is stored in single-cue containers (printed words only).

Relatively open: Stuff is eaily visible, not reachable; or behind low, unlocked, untied doors.

Closed: Single cue storage; and/or behind low, locked, or tied doors; or up high and behind doors; or up high and on open shelves but placed in such a way (or so high) that visibility is impeded.

1. Primarily open and relatively open storage. Proportion very high with respect to any closed storage that may be available.
2. Open, relatively open, closed all well represented in close to equal proportions.
3. Open and closed. Good proportions of each, and virtually no relatively open.
4. Some open, much closed. Much greater proportion of stuff stored closed than open.
5. Closed. Virtually all stored as defined above as "closed".

F. Indoor shelf storage patterns

1. Essentially conglomerate or messy. Sub-set distinctions are unclear. For instance, a variety of different kinds of paper stacked together; or paper stored next to structured games and at some distance from crayons, paint sticks, etc.; or six different play materials distributed among 12 - 20 containers and dispersed on shelves.
2. Some conglomerate; some set, sub-set distinction.
3. Clearly organized in sets of sets. Boundaries within and between sets clear and look easy to maintain by children.
4. Very little stored on open shelves. Can't tell.
5. Can't remember.

G. Indoor arrangement of space

1. Insulated area development. Small group space physically bounded on 3 to 4 sides in such a way that the unit does not appear "wide open" to room as a whole. (See characterizations of "insulated potential or play units" in section IV D of this schedule.)
2. Straight line development. Walls lined with shelves and/or cupboards full of stuff to be used at tables; house play equipment or block building stuff lined up (in a corner at most) and looks "wide open" to room. Used with tables, floor. Children expected to move freely and make own choices.

3. Tables with individual activities on them, among which children may choose. (Teacher may or may not bring additional stuff at children's request, but children rarely go to shelves themselves.)
4. Tables or circumscribed floor areas for group activities to be characterized from the observational study.

H. Staff behavior toward visual intrusion: what can be seen beyond group boundaries.
0. Does not apply
1. Children permitted to watch
2. Children not permitted to watch
3. Confused: staff provides unclear cues or contradictory cues

I. Staff behavior toward visitors: people who come in or through the group space.
0. Does not apply
1. Children permitted to relate freely
2. Children permitted to relate, but staff provides no cues that it is alright
3. Children not permitted to relate
4. Unclear: staff provides unclear or contradictory cues

VII. Method for Calculating Space Quality

This method for calculating space quality can be used for evaluating both inside and outside space, but it is a much better predictor of behavior for outside space. A predictive rating for inside space must take into account equipment storage patterns and school policies regarding space use. Overall quality for a yard or an inside play room is the sum of score numbers for organization, complexity, variety, special problems, and number of places per child.

A. Organization

See section I B in this schedule for calculation of maximum, moderate, and minimum organization.

	(score number)
Maximum	1
Moderate	2
Minimum	3

B. Complexity

3 or more complex + 1 or more super	1
4 or more complex + 0 super	2
3 or fewer complex + 0 super	3

C. Variety

6 or more	1
5 or fewer	2

D. Special problems (score number)

None	1
Lack of shade	2
Broken or shabby equipment	2
Space is used as a pathway for other people	2
Two groups in one space which are interfering with one another	2
No shade and shabby equipment	3
Any combination of 2 or more special problems	3

E. Number of places per child
(See section II, B, 2 of this schedule)

1.6 or more	1
1.1 to 1.5	2
1.0 and fewer	3

F. Calculation of space quality: the scores on each of the above dimensions are summed for each space and differentiated on a 7-point continuum ranging from high to low quality as follows.

Space quality	Sum of quality scores
1. Excellent	5,6
2. Very good	7
3. Good	8
4. Average	9
5. Poor	10
6. Very poor	11
7. Bad	12 or more

The number assigned to each space quality category is the index used in reporting the results of space analysis.

Home Space Rating

Our major purpose in designing this rating was to get some understanding of the features of homes which might be regulating the behavior of participants. The Caldwell Environment Inventory (Caldwell, 1966) was helpful, but it is a long inventory requiring much information which could not easily be obtained by unobtrusive observation. The following home space analysis represents our beginning attempts to assess a series of dimensions which struck us as possibly useful. All observers filled out a space rating for each home in which they observed.

Space Analysis for Homes

Home: _____
Date: _____
Time: from _____ to _____

1. Brief description of what was observed and where.*

2. List children present by age, sex.*

3. List adults by sex, role (include visitors, chatting across fence, etc.)*

4. Please sketch floor and yard plan as far as you know it and label with common names.* Also label as follows:

   EQ = room/yard appears permanently set with play equipment
   PL = space in which you saw children playing
   ATE = space in which you saw children eat
   OL = rooms/yards off limits as far as you know

5. Home being described is: house _____, apartment _____.
   Home is single story _____, multiple story _____.

6. Size of home:

   _____ 1. Very small, under 900 sq. ft.
   _____ 2. Small, 900-1200 sq. ft.
   _____ 3. Average, 1300-1800 sq. ft.
   _____ 4. Large, 1900-2500 sq. ft.
   _____ 5. Very large, 2600 or more sq. ft.

7. Size of back yard

   _____ 0. Don't know
   _____ 1. None
   _____ 2. Limited
   _____ 3. Average
   _____ 4. Large

8. Size of front yard

   _____ 0. Don't know
   _____ 1. None
   _____ 2. Limited
   _____ 3. Average
   _____ 4. Large

9. Access from home to yard

   _____ 1. Direct
   _____ 2. Close, but not direct
   _____ 3. Inside and outside distant

* The space required in the schedule used by observers for lists, sketches, etc. has been eliminated to keep the form compact.

10. Please answer whichever of the two following descriptions apply.

1. Home has both a playroom and a living room: are adult expectations for children's behavior different in the two places?
No_____ Yes _____ Describe:

2. Home has no distinct playroom apart from living room: are adult expectations for living room behavior formal or restricted in some way? No_____ Yes _____ Describe:

11. Children's choice in where to be:

_____ 0. Don't know, can't tell
_____ 1. No choice by children; they all stay in a particular room or yard chosen by adult. They leave only to run errand or go to bathroom, then return immediately.
_____ 2. Some choice; some rooms or yards may be off limits but children have free choice among remainder.
_____ 3. High choice; children have freedom to move among all indoor and outdoor spaces (except for rooms in which someone may be sleeping).

12. Play equipment specifically provided for children.

Rate each category listed below according to the following continuum:

1 saw none
2 minimal amount
3 average amount
4 more than average
5 a great deal

Categories of play equipment:

_____ A. Dramatic play props
_____ B. Structured games and puzzles - closed
_____ C. Books, magazines, comic books, blue chip stamp catalogs
_____ D. Messy creative: dough, paint, sand
_____ E. Water play
_____ F. Large vehicles to ride
_____ G. Live animals to hold
_____ H. Outdoor physical: slides, swings, climbers
_____ I. Construction, table-type toys: crystal climbers, lego blocks, tinker toys, snowflakes, peg boards
_____ J. Work tools
_____ K. Floor blocks
_____ L. Small wheel toys, cars, trucks, etc.
_____ M. Challenge or skill equipment: balls, bean bags, carpentry
_____ N. Art materials: pencils, crayons, paper, scissors
_____ O. Other

13. Was there any child sized furniture, tables and chairs?
_____ a. No
_____ b. Yes

14. Did children use regular household furnishings and equipment in their play and/or work activities?
_____ a. No
_____ b. Some, limited
_____ c. Apparently unlimited

15. Risk taking opportunities. Were there opportunities to do skillful things which contain an element of risk, such as cooking, using kitchen equipment, tools, going about the neighborhood, climbing on ladders?
_____ a. Many available
_____ b. Above average
_____ c. Some
_____ d. Few
_____ e. Virtually none

16. Is there overlap between child's work and adult world? (Check any one, two, or all three, whichever seems appropriate, using single and double checks to show relative amounts.)
_____ a. Mother participates in children's activities as director or helper. She maintains primarily a directed teaching role, and exhibits neither self-pleasure or self-interest.
_____ b. Mother shares in children's activities with obvious enjoyment or interest in the activity itself.
_____ c. Children play essentially alone; mother does not participate.

17. Mother's apparent dependence/independence expectations from children.
_____ a. Expects high degree of independence
_____ b. Some
_____ c. Average
_____ d. Encourages dependence
_____ e. Dependence heavily encouraged.

18. Does home have "treasures"? Describe:

19. Are there older children present before or after school? Record in detail by name, age, sex.

20. Describe what you know of the friendship/play patterns of older children which may occur in this home.

21. Rate homes on the following dimensions. Use one or two ratings per dimension depending on what feels comfortable to you as a legitimate description of the structuring of the home both from space and mother.

a. Formal	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Informal
b. Quiet	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Noisy
c. Passive receptive	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Active
d. Shared or group space	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Private space or privacy
e. O.K. to be dirty	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Important to be clean; dirt is bad
f. Messy, space dis- organized, "chaotic"	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Neat, space organized, neat, must be maintained
g. Time loose- ly scheduled (responsive time)	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Time tightly scheduled (clock time)
h. Flexible	___ 1	___ 2	___ 3	___ 4	___ 5	___ 6	___ 7	Inflexible

Reliability of Space Ratings

Assessment of reliability was not a primary concern for the space ratings. Space in all settings was assessed by Sybil Kritchevsky. Because she had developed the inventories and was an experienced space rater, the consistency of her judgments already had been demonstrated. In addition we had several other checks on the ratings. First were the ratings for the physical space on the second-level coding which would give us a double check on the variety and complexity of equipment, certain aspects of scheduling and the teacher behavior with respect to use of space. We also obtained observer judgments on all dimensions which could be noted as part of the ongoing observations so that throughout the study such dimensions as novelty, softness and school policy with respect to space were rated by all observers. Our primary consideration for doing a reliability assessment was to determine whether or not the definitions and descriptions, as they had been

used, were clear and communicated the same meaning to others as they did to the space rater. Consequently, this discussion of reliability should be considered an attempt at clear communication, not as a formal reliability assessment.

Center Space Ratings

A check on center space was conducted at Pacific Oaks Children's School during a spring vacation when the yards were not in use. The space rater, Sybil Kritchevsky, evaluated all yards; the other four observers rated at least one yard, thus permitting paired ratings as well as a check against the space rater. Assessing space during a vacation period was useful because it meant that all observers could spend as much time as they wanted in settings which would remain stable while they were recording. This particular choice had a severe limitation because the yards did not have materials set out as normally used. This circumstance produced some confusion among observers because the instructions that space should be rated according to its normal use turned out to be ambiguous. Nevertheless, this approach did clarify for us those problems which were due to inadequate training of observers and ambiguities in description from the inadequacies inherent in the schedule. In discussing the dimensions, the outline used in the space schedule will be followed except for consideration of complexity of equipment. This dimension merits considerable discussion and will be held until last.

Organization. The dimension of paths presented no major problems inside or out. There were three complete agreements by a paired observer and the space rater. In the other three cases, one observer differed by one point. On the continuum of fraction of surface covered both indoors and out, there was good agreement. One observer rated one yard as more crowded than others. The final calculation would have led one observer to conclude that one yard had moderate organization rather than maximum. Otherwise the final rating on organization would have been the same for all yards.

Novelty. Novelty was assessed for all centers by all observers. There was seldom more than a one-point difference in their assessment of novelty.

Intrusion. The intrusion rating turned out to be easier to evaluate in community settings than at Pacific Oaks where the Children's School is highly insulated from intrusion from the streets or the outside, but is exceedingly subject to intrusion by visitors to the college. The complications which this circumstance produced led us to revise the rating and to clarify the basis for rating.

Seclusion potential. Observer estimates of the size of the yard seldom varied more than one point. Shape presented no problem. Observers do need training in identifying individual hide units and insulated play units. Our space rater consistently identified more of these than other observers. When the differences were pointed out, invariably observers said, "Oh, I didn't notice that", or "I didn't think about that." Probably it will always be difficult to get an exact count of such spaces especially in highly developed space. However, it is easy to differentiate space which offers virtually none of these opportunities from space which offers many of them.

Softness. Softness ratings presented few problems; either an item was present or it was not. One observer called small carpet squares a rug. This was an incorrect understanding of the category since a rug has to be large enough for children to lie on. One other problem that arose was whether or not a yard had mud to dig in. There was no designated mud area in this yard although it would be possible to dig in the mud outside of the sand box.

School policies regarding space use. These were rated by all observers in all centers and present no particular problem. However, "don't know" ratings were frequent where a behavior was not seen, but observers felt it could occur. Multiple ratings were especially useful here.

Reliability on storage turned out to be higher than we had anticipated. Observers were sometimes one point off, but at no time did they confuse opposite ends of the continuum.

Interest: complexity of equipment and amount-to-do. Observer agreement on the complexity of outdoor space was satisfactory. See Table 1.

TABLE 1

RELIABILITY ON EQUIPMENT COMPLEXITY IN OUTDOOR SPACE

COMPLEXITY OF EQUIPMENT	SPACE 1 Observer			SPACE 2 Observer			SPACE 3 Observer		
	#1	#2	#3*	#1	#2	#3*	#1	#2	#3*
Simple	11	11	12	17	13	12	5	4	6
Complex	9	5	7	8	4	8	6	6	6
Super unit	2	2	2	3	4	3	4	4	4

* Space rater

The disagreements concerning complexity which did exist resulted primarily from incomplete understanding of the definitions and not because of inherent ambiguity in the materials. For example, a group of crates and boxes was labelled as simple, when the definition clearly makes it complex. See Table 2.

TABLE 2

RELIABILITY ON NUMBER OF PLAY SPACES IN OUTDOOR YARD AREA

YARD AREA	RATINGS			
	Observers		Mean of	Space
	#1	#2	#1 & #2	Rater
Outdoor area A	63	47	55.0	56
Outdoor area B	73	61	67.0	68
Outdoor area C	61	60	60.5	62

Despite discrepanices, the figures on number of play spaces clearly would have differentiated this yard from one of lower quality.

Observers had much greater problems with reliability on amount of indoor equipment. Table 3 shows the discrepancy among observers in estimating the complexity of equipment. These difficulties in turn would make for considerable differences in the number of play places. (See Table 4.)

TABLE 3

RELIABILITY ON EQUIPMENT COMPLEXITY IN INDOOR SPACE

COMPLEXITY OF EQUIPMENT	SPACE 1 Observer			SPACE 2 Observer			SPACE 3 Observer		
	#1	#2	#3*	#1	#2	#3*	#1	#2	#3*
Simple	0	1	0	0	3	0	1	0	0
Complex	15	10	25	1	5	12	6	6	9
Super unit	3	4	4	6	6	5	2	2	3

* Space rater

TABLE 4

NUMBER OF PLACES AS CALCULATED FROM OBSERVER REPORTS - INDOOR SPACES

INDOOR SPACE	RATINGS			
	Observers #1	#2	Mean of #1 & #2	Space Rater
Indoor area A	84	73	78.5	132
Indoor area B	52	71	66.6	88
Indoor area C	41	40	40.5	60

Observers simply were not recording all contents in the space. Apparently, they were unprepared for the laborious and systematic procedure of itemizing equipment in a play area which was so richly supplied. In all cases the space rater recorded considerably more equipment. The result was a marked discrepancy in number of play places. However, even the lowest number would have qualified the space as rich in equipment. Obviously the space rater was more accurate than the inexperienced raters.

It became apparent with inside space that school policies were a great deal more important in determining its use than is the case with outside space. Outside areas are almost always used by children in a relatively self-regulated manner, so that for both open and closed structure centers, the time outside is a time when children can play freely. However, inside space often works quite differently in these two types of centers; there may be a great deal of equipment but children are not free to use it, or they are not free to enter a particular area except by permission of the teacher. For these reasons we have come to feel that inside space must be judged by different dimensions than outside space. It appears that a more workable scheme for characterizing equipment in indoor space would be to count it by type and then rate the amount on a five-point scale from none to very extensive. Indoor equipment then would be listed as follows:

1. House play
2. Other dramatic play
3. Structured games and puzzles
4. Reading materials (books, magazines, etc.)
5. Messy creative (dough, clay, paint, etc.)
6. Art materials (crayons, pencils, scissors, etc.)
7. Water play
8. Small animals which can be held and petted
9. Construction toys (blocks, crystal climbers, lego sets, tinker toys)
10. Small wheel toys such as cars
11. Challenge or skill equipment, balls, bean-bags, carpentry
12. Floor blocks
13. Other

When equipment listing is coupled with other characteristics such as path, type of room arrangements, type and availability of storage, softness, and intrusion ratings, it seems that the reliability for the inside space rating would be markedly increased and would also give a more accurate prediction of children's behavior.

In summary, it may be useful to list some of the sources of difficulty which were identified. We did not provide a careful program of training and discussion to precede the actual ratings. Not only had observers not rated space in several years, but some new concepts had been introduced. The ratings produced many differences related to inexperience and inadequate understanding of definitions. The space sketch was eliminated from the rating procedure and only later did we realize how useful this device is. First, raters are less likely to omit things when they sketch; second, the presence of sketches allows the collator to back-check and it becomes possible to 'see' what the rater 'saw' and thus to grasp the implications of a variety of discrepancies.

Limited numbers of unusually rich settings were used and it seems likely that the richer the space, the more likely that raters will omit items. Furthermore, this schedule is most useful in rating settings where the range in quality is large. It will easily differentiate those settings which are rich in equipment and high in organization from those which are not. However, it is not sensitive enough to pick up nuances among settings which are all very rich in equipment.

The problems with the indoor space rating could not be attributed solely to observer inexperience. We concluded that indoor space needs to be assessed differently from outdoor space. Questions raised about assessing indoor space will be considered in a later publication.

Home Space Ratings

The assessment of home space presented a number of problems which we do not pretend to have solved. Interviewing would have yielded additional information about the mother's policies and practices in the home. However, many studies have yielded this type of data, which is inevitably limited by the mother's selective perceptions and by her unwillingness to reveal some things. We chose to concentrate our efforts on those characteristics of a home environment which could be identified through direct observation only.

In the reliability check for center space, the space remained unaltered and was available for inspection by the paired observers during its assessment. The conditions for assessment in home space were

quite different. Three observers assessed each of the 14 family day care homes based on what they saw during their home observations. Since observers were never in the home at the same time, they often saw different parts of the home and entirely different activities. For example, the first observer might see early morning play in a den, the second, back yard play and then lunch in the kitchen, and the third, afternoon play in the front yard. Further, while observers in a center or nursery school felt free to check equipment closely, or to walk around and get some feel for the whole setting, they could not do this in homes. The bedrooms in a home might have been seen only by the observer who had to pass them on the way to the bathroom; the other observers, not having seen the back of the house, might rate its size as much smaller. Often one observer found out something useful by accident which the others had no opportunity to discover. For example, when a next door neighbor came out and spoke to the children, the FDC mother described to the observer the many things which the neighbor does with the children, thus calling attention to a playhouse and to neighbors' dogs which were regularly available to the children.

The following tables illustrate the amount of agreement among observers on equipment and selected characteristics of homes. Near agreement means that two of three observers agreed and the third has not rated or is no more than one point away on a continuum. Partial agreement was recorded when three observers were within one point of each other. Disagreement was recorded for differences two or more points apart on the continuum.

TABLE 5

HOME EQUIPMENT RELIABILITY

EQUIPMENT TYPE (N=14 homes)	AMOUNT OF AGREEMENT			
	Agreement	Near Agreement	Partial Agreement	Disagreement
Dramatic play, girls	3	8	2	1
Dramatic play, boys	4	7	2	0
Structured games	8	2	0	4
Books, magazines, etc.	4	9	0	1
Messy creative	5	7	0	2
Water play	9	3	0	2
Large vehicles	4	7	0	3
Live animals	8	5	0	1
Outdoor physical	6	3	3	2
Construction toys	7	5	0	2
Floor blocks	9	5	0	0
Small wheel toys	4	8	0	2
Skill equipment	10	3	0	1
"Treasures"	5	6	0	3
Child-sized furniture	5	8	0	1
Other	8	0	0	6

The following equipment items were rated with near agreement or agreement 86% of the time.

Books, magazines
Messy creative, such as dough, paint, sand, soapsuds, etc.
Water play
Live animals
Construction toys
Floor blocks
Small wheel toys
Skill equipment such as balls, bean bags, carpentry tools
Presence or absence of child-sized furniture

TABLE 6

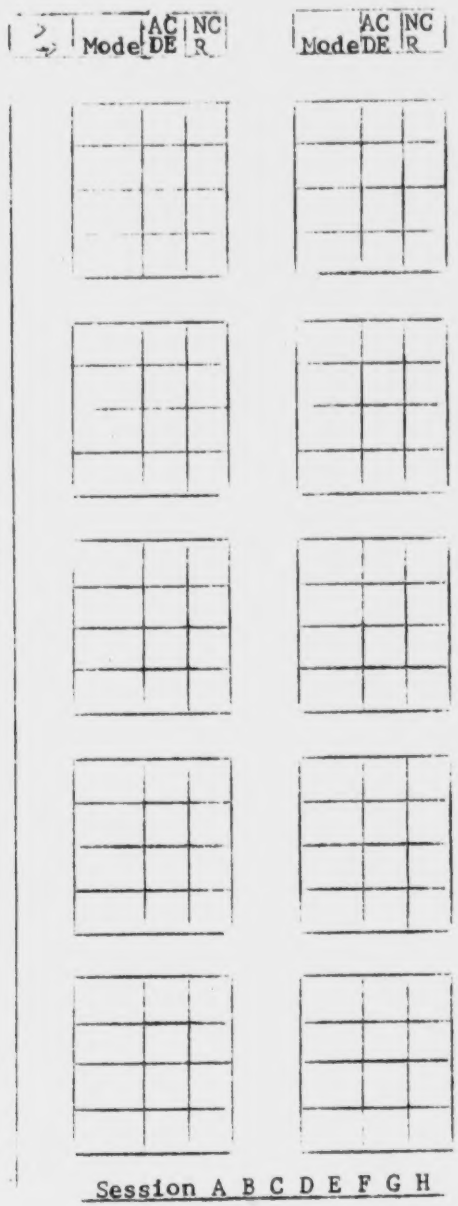
SPACE RELIABILITY FOR SELECTED CHARACTERISTICS OF 14 HOMES

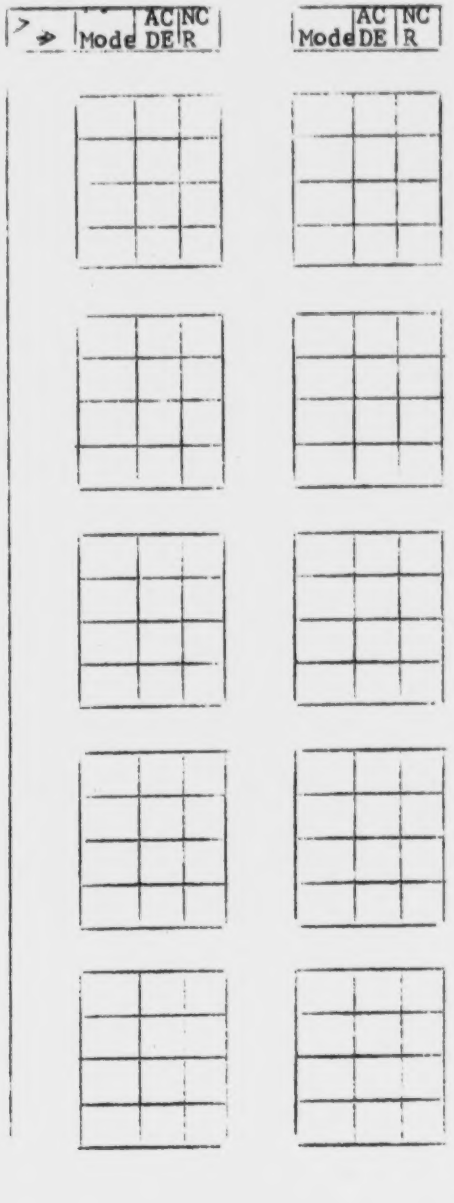
SPACE CHARACTERISTIC (N=14 homes)	AMOUNT OF AGREEMENT				
	Agree-ment	Near Agreement	Partial Agreement	Disagree-ment	Don't know
Size of Facility					
House size	2	8	1	3	0
Backyard size	0	6	4	0	4
Front yard size	2	8	1	2	0
Use by Children					
Children's choice in where to be	3	9	2	0	0
Children's use of regular furnishings in their work/play	2	9	0	3	0
Seven-point Scale:					
Quiet-noisy	3	5	2	4	
Receptive-active	3	2	7	2	
Shared-private space	1	2	2	9	
Dirty-clean	1	6	2	5	
Messy-neat	3	3	3	5	
Time tightly-loosely scheduled	5	4	2	3	
Flexible-inflexible	4	3	5	2	

Table 6 shows reliability on selected spatial characteristics of homes. House and yard size estimates were less reliable than anticipated and probably reflect both lack of specific training and the conditions under which estimates were made. Observing in a yard often yields different information from impressions obtained by looking out of a window. Both ratings of use of space by children were fairly reliable and also seem to be useful indicators of children's experience.

The seven-point scale ratings were not reliable and may indicate the degree of inconsistency found in homes; i.e., a home may be messy in the morning and tidied up by late afternoon, or tightly scheduled around lunch time to fit the school schedule of older children, but loosely scheduled for the rest of the day.

APPENDIX A





Date

Time

Minutes

Activity

Segment is
Indoors
Outdoors

A
B1
B2
B3
C
D
E1
E2
E3
F

II1
2
3
III
IV
V
VI
VII
VIII
IX

Tchr-Child ratio

Child

School

Observer

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